

Space Weather Highlights
26 March - 01 April 2018

SWPC PRF 2222
02 April 2018

Solar activity was mostly at very low levels with the exception of 30 Mar when an isolated C4/Sf flare was observed at 30/0804 UTC from Region 2703 (S08, L=193, class/area Axx/010 on 31 Mar). Associated with the flare was a Type II radio sweep (805 km/s) and a coronal mass ejection (CME) off the east limb first observed at 30/0840 UTC in SOHO/LASCO C2 imagery. No Earth-directed CMEs were observed during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels throughout the period with a maximum flux of 43,750 pfu observed at 28/2045 UTC.

Geomagnetic field activity began the period under continued effects from a negative polarity coronal hole high speed stream (CH HSS). Solar wind speed ranged from approximately 450-550 km/s on 26-27 Mar with total field between 2-8 nT. By 28-29 Mar, solar wind speeds slowly returned to nominal levels while a solar sector boundary crossing was observed around 29/0710 UTC into a positive sector. Solar wind speed showed a slight increase in speed to 380-480 km/s from 30 Mar-01 Apr with total field variable between 2-9 nT suggesting possible intermittent connections with a northern polar extension positive polarity CH HSS. The geomagnetic field was mostly quiet with periods of unsettled activity observed on 26-27 Mar and again on 31 Mar.

Space Weather Outlook
02 April - 28 April 2018

Solar activity is expected to be at very low levels with a slight chance for a C-class flare from 02-10 Apr due to potential further activity from Region 2703. Very low levels are expected through the rest of the period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at moderate to high levels on 02-04 and 12-28 Apr due to CH HSS influence.

Geomagnetic field activity is expected to be at unsettled to active levels on 05-07, 10-16, 18-23 Apr with G1 (Minor) storm levels likely on 12 Apr due to recurrent CH HSS activity.



Daily Solar Data

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 ⁻⁶ hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
26 March	68	0	0	A0.0	0	0	0	0	0	0	0	0
27 March	68	0	0	A0.0	0	0	0	0	0	0	0	0
28 March	69	0	0	A0.0	0	0	0	0	0	0	0	0
29 March	69	0	0	A0.0	0	0	0	0	0	0	0	0
30 March	69	11	10	A0.0	1	0	0	4	0	0	0	0
31 March	69	12	10	A2.0	0	0	0	1	0	0	0	0
01 April	69	0	0	A0.0	0	0	0	1	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day -sr)			Electron Fluence (electrons/cm ² -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
26 March	7.2e+05	1.6e+04	3.5e+03	3.4e+08		
27 March	1.0e+06	1.6e+04	3.4e+03	1.4e+09		
28 March	9.7e+05	1.6e+04	3.5e+03	2.3e+09		
29 March	1.0e+06	1.7e+04	3.8e+03	1.3e+09		
30 March	1.3e+06	1.6e+04	3.5e+03	4.6e+08		
31 March	8.8e+05	1.6e+04	3.5e+03	1.6e+08		
01 April	6.3e+05	1.6e+04	3.4e+03	1.0e+08		

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
26 March	10	3-3-3-2-1-2-2-2	22	3-3-2-6-4-3-2-2	12	3-3-3-2-2-2-2-3
27 March	7	3-2-3-2-2-1-0-1	20	3-3-3-5-5-3-0-0	9	3-3-3-2-2-1-0-1
28 March	2	1-0-1-0-1-1-1-0	2	1-0-2-1-0-0-0-0	3	1-0-1-1-0-0-0-0
29 March	3	0-0-1-1-1-2-1-1	3	0-0-0-3-2-0-1-0	4	0-0-1-2-1-2-1-1
30 March	4	1-1-1-2-2-1-1-1	3	1-1-1-2-1-0-0-1	5	2-2-1-1-1-1-1-1
31 March	6	3-2-2-2-2-1-0-1	4	1-1-1-2-2-1-0-1	7	3-2-2-2-2-1-1-1
01 April	4	1-1-2-1-2-1-1-1	3	1-0-2-2-2-0-1-0	6	2-1-1-2-2-1-1-1

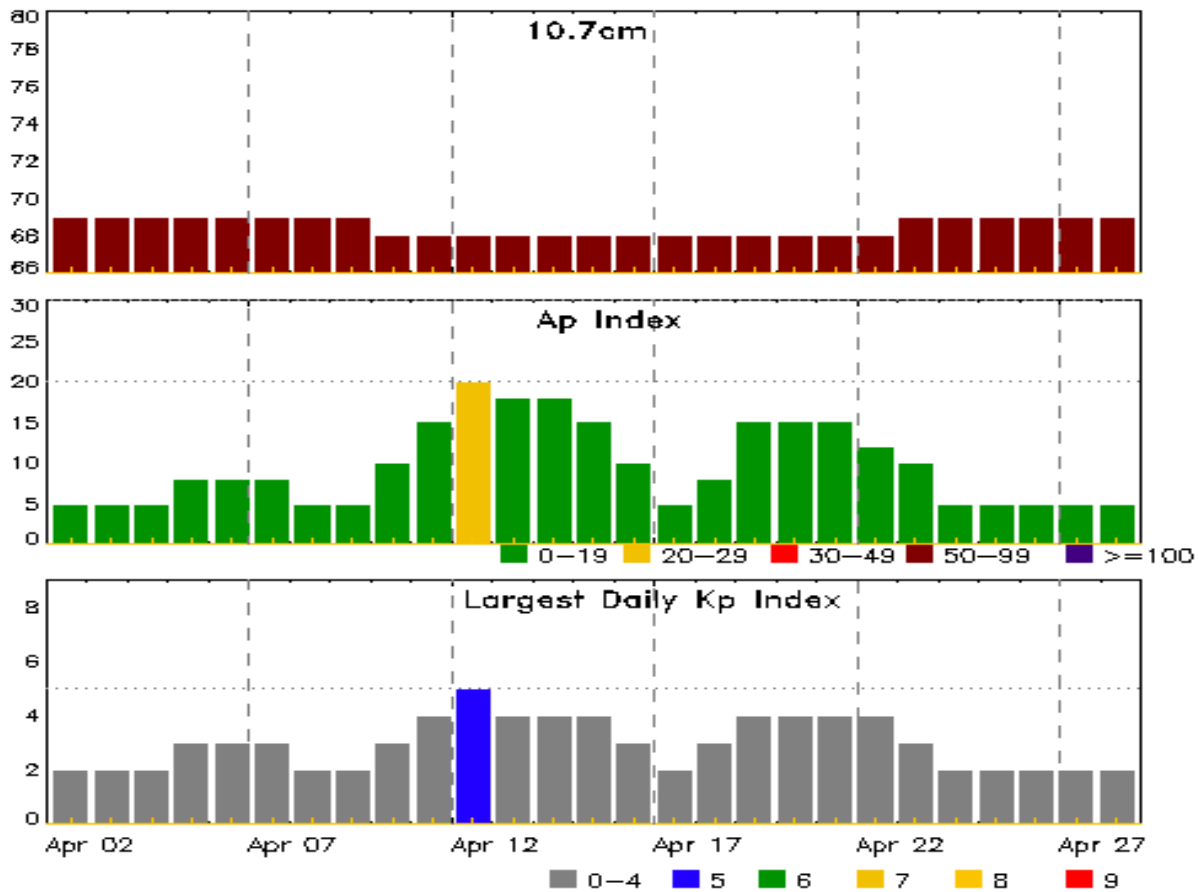


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
26 Mar 0542	EXTENDED WARNING: Geomagnetic K = 4	25/2122 - 26/1200
26 Mar 1320	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	16/0105
27 Mar 0304	WARNING: Geomagnetic K = 4	27/0305 - 0900
27 Mar 0859	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	16/0105
28 Mar 0859	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	16/0105
29 Mar 0859	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	16/0105
30 Mar 0859	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	16/0105
30 Mar 0935	ALERT: Type II Radio Emission	30/0757
31 Mar 1337	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	16/0105
01 Apr 1410	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	16/0105



Twenty-seven Day Outlook



Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
02 Apr	69	5	2	16 Apr	68	10	3
03	69	5	2	17	68	5	2
04	69	5	2	18	68	8	3
05	69	8	3	19	68	15	4
06	69	8	3	20	68	15	4
07	69	8	3	21	68	15	4
08	69	5	2	22	68	12	4
09	69	5	2	23	69	10	3
10	68	10	3	24	69	5	2
11	68	15	4	25	69	5	2
12	68	20	5	26	69	5	2
13	68	18	4	27	69	5	2
14	68	18	4	28	69	5	2
15	68	15	4				

Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	Half	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
			Max						245	2695	II	IV

No Events Observed

Flare List

Date	Time			X-ray Class	Optical		
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #
29 Mar	1625	1634	1643	A9.9			
30 Mar	0256	0300	0302	B1.7			2703
30 Mar	0411	0415	0419	B1.8			2703
30 Mar	0507	0515	0521	B4.5			2703
30 Mar	0757	0804	0808	C4.6	SF	S06E71	2703
30 Mar	1113	1117	1120	B2.1	SF	S12E69	2703
30 Mar	1326	1327	1330		SF	S10E68	2703
30 Mar	1758	1807	1815	B2.0	SF	S10E68	2703
31 Mar	0144	0148	0155	B1.5			2703
31 Mar	0859	0911	0923	B7.1	SF	S11E55	2703
31 Mar	1616	1620	1625	B1.1			2703
01 Apr	0049	0053	0057	B1.1	SF	S13E43	2703
01 Apr	1251	1308	1319	B9.0			2703



Region Summary

	Location	Sunspot Characteristics						Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10 ⁻⁶ hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
Region 2703															
30 Mar	S08E60	192	10	1	Axx	1	A	1			4				
31 Mar	S08E47	193	10	2	Axx	2	A				1				
01 Apr	S08E34	193	plage								1				
								1	0	0	6	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 193

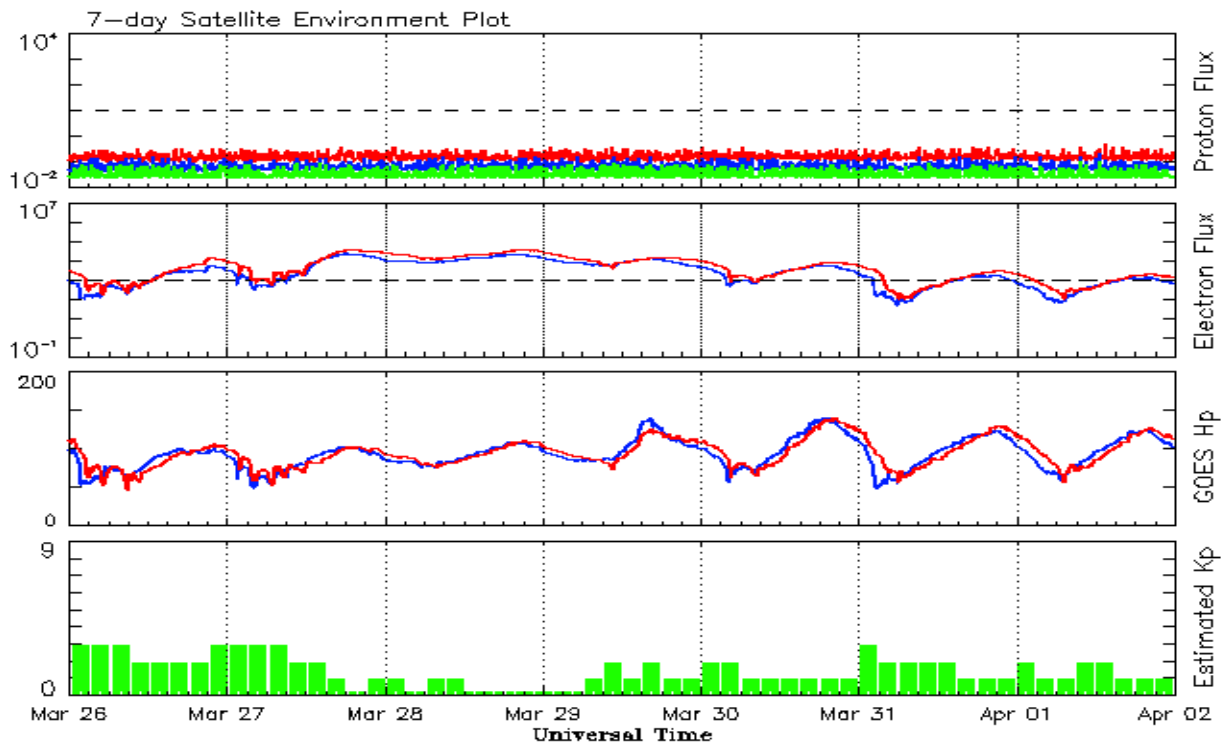


Recent Solar Indices (preliminary)
Observed monthly mean values

Month	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
2016									
April	39.2	22.7	0.58	45.0	28.7	93.4	95.3	10	11.8
May	48.9	30.9	0.64	42.1	26.9	93.1	93.2	12	11.7
June	19.3	12.3	0.65	39.0	24.9	81.9	90.4	9	11.4
July	36.8	19.4	0.53	36.5	23.1	85.9	87.7	10	11.2
August	50.4	30.1	0.60	34.2	21.6	85.0	85.5	10	11.2
September	37.4	26.8	0.72	32.1	19.9	87.8	83.7	16	11.3
October	30.0	20.0	0.67	31.1	18.9	86.1	82.5	16	11.6
November	22.4	12.8	0.57	29.4	17.9	78.7	81.1	10	11.6
December	17.6	11.1	0.64	28.1	17.1	75.1	80.0	10	11.4
2017									
January	28.1	15.7	0.55	27.3	16.7	77.4	79.4	10	11.3
February	22.0	15.8	0.71	25.5	15.9	76.9	78.7	10	11.3
March	25.4	10.6	0.42	24.6	15.4	74.6	78.6	15	11.5
April	30.4	19.4	0.64	24.3	14.9	80.9	78.4	13	11.5
May	18.1	11.3	0.62	23.1	14.0	73.5	77.7	9	11.3
June	18.0	11.5	0.64	22.0	13.3	74.8	77.3	7	11.3
July	18.8	10.7	0.59	20.8	12.6	77.7	76.8	9	11.0
August	25.0	19.6	0.80	19.7	11.7	77.9	76.3	12	10.7
September	42.2	26.2	0.62	18.6	10.9	92.0	75.9	19	10.3
October	16.0	7.9	0.49			76.4		11	
November	7.7	3.4	0.44			72.1		11	
December	7.6	4.9	0.64			71.5		8	
2018									
January	7.8	4.0	0.51			70.0		6	
February	16.0	6.4	0.40			72.0		7	
March	6.0	1.5	0.25			68.4		8	

Note: Values are final except for the most recent 6 months which are considered preliminary.
Cycle 24 started in Dec 2008 with an RI=1.7.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 26 March 2018*

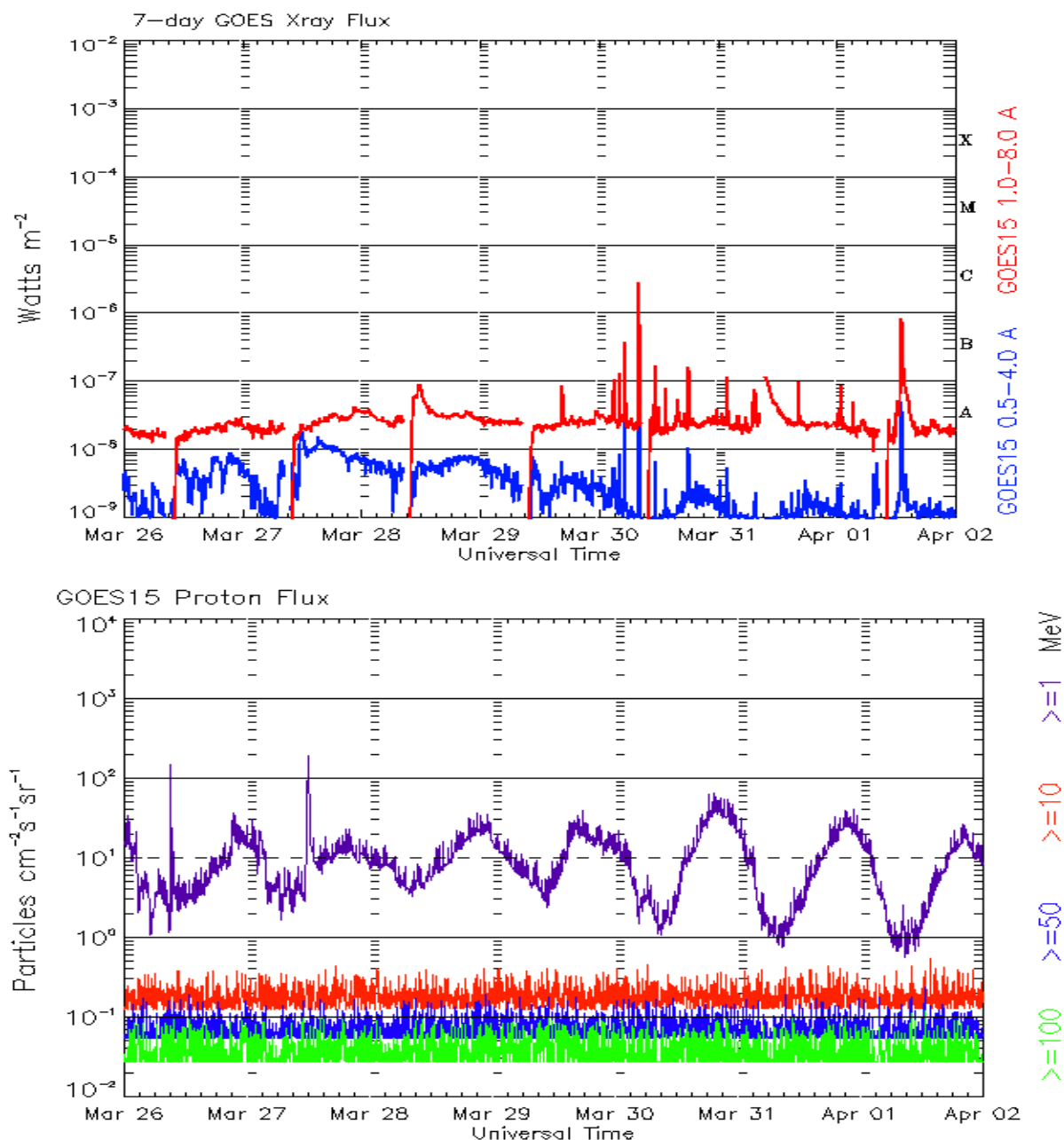
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



*Weekly GOES Satellite X-ray and Proton Plots
Week Beginning 26 March 2018*

The x-ray plots contains five-minute averages x-ray flux (Watt/m²) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged integral flux units (pfu = protons/cm² -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.



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Notice: The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned.
Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

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